Amendments to the Claims

This listing of the claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) A method ~~of applying solvents~~ for [[the]] removal of ~~polymer~~ polymers, possibly mixed with copper oxide residue, from exposed surfaces, comprising ~~the steps of~~:

providing a substrate, at least one copper point of electrical contact having been provided in or on ~~the surface of~~ said substrate~~, said at least one point of electrical contact comprising copper~~;

depositing an etch stop layer over ~~the surface of~~ said substrate;

depositing at least one layer of dielectric over ~~the surface of~~ said etch stop layer;

creating at least one opening through said at least one layer of dielectric ~~provided over the surface of said etch stop layer~~, said at least one opening having sidewalls and a bottom surface;

removing said etch stop layer from said bottom surface of said at least one opening, exposing ~~the surface of~~ said at least one copper point of electrical contact ~~having been provided in~~

~~or on the surface of said substrate~~, said removal of said etch stop layer causing accumulation of polymers, possibly mixed with copper oxide residues, over exposed surfaces, said exposed surfaces comprising the surface of said at least one layer of dielectric, further comprising said sidewalls of said at least one opening, further comprising said exposed at least one copper point of electrical contact;

applying a first plasma treatment to said exposed surfaces ~~comprising the surface of said at least one layer of dielectric, and to said sidewalls of said at least one opening created through said at least one layer of dielectric and to said exposed surface of said at least one point of electrical contact having been provided in or on the surface of said substrate~~;

applying a DI water (DIW) rinse to said exposed surfaces, said DI water rinse preferably being performed at room temperature and under atmospheric pressure, said DIW rinse combined with said first plasma treatment essentially removing said polymers from said sidewalls of said at least one opening; and

applying a second plasma treatment to said exposed surfaces, said second plasma treatment essentially removing said polymers and said copper oxide residues from said bottom surface of said at least one opening.

2. (original) The method of claim 1, said first plasma treatment providing chemically interaction with said accumulated polymer deposits, thus enabling the removal of the polymer residues.

3. (original) The method of claim 1, byproducts of said first plasma treatment being water soluble.

4. (currently amended) The method of claim 1, said first plasma treatment not causing damage to exposed surfaces of said at least one layer of dielectric ~~deposited over the surface of said layer of etch stop layer~~.

5. (original) The method of claim 1, said first plasma treatment being selected from the group consisting of N_2/O_2 based plasma treatment and N_2/H_2 based plasma treatment and O_2 based plasma treatment and N_2 based plasma treatment and H_2 based plasma treatment.

6. (previously presented) The method of claim 5, said N_2/O_2 based plasma treatment comprising applying isotropic plasma etching in an etchant comprising nitrogen, performed in a parallel HDP reactor in-situ, in a plasma containing N_2/O_2 at a flow rate of between about 30 and 60 sccm, in an argon carrier gas at a flow rate sufficient to maintain a pressure between about 5 and 15

mTorr said HDP reactor and at an rf power of between about 400 and 1,200 Watts TCP and between about 1,000 and 1,500 Watts bias.

7. (previously presented) The method of claim 5, said O_2 based plasma treatment comprising applying isotropic plasma etching in an etchant comprising nitrogen, performed in a parallel HDP reactor in-situ, in a plasma containing O_2 at a flow rate of between about 30 and 60 sccm, in an argon carrier gas at a flow rate sufficient to maintain a pressure between about 5 and 15 mTorr said HDP reactor and at an rf power of between about 400 and 1,200 Watts TCP and between about 1,000 and 1,500 Watts bias.

8. (cancelled).

9. (previously presented) The method of claim 5, said N_2 based plasma treatment comprising applying isotropic plasma etching in an etchant comprising nitrogen, performed in a parallel HDP reactor in-situ, in a plasma containing N_2 at a flow rate of between about 30 and 60 sccm, in an argon carrier gas at a flow rate sufficient to maintain a pressure between about 5 and 15 mTorr said HDP reactor and at an rf power of between about 400

and 1,200 Watts TCP and between about 1,000 and 1,500 Watts bias.

10. (cancelled).

11. (currently amended) The method of claim 1, said at least one layer of dielectric ~~deposited over the surface of said etch stop layer~~ comprising a low-k dielectric.

12. (original) The method of claim 1, said second plasma treatment being sensitive to removing copper oxide.

13. (currently amended) The method of claim 1, said second plasma treatment being sensitive to not chemically interacting with said at least one layer of dielectric ~~deposited over the surface of said etch stop layer~~.

14. (original) The method of claim 1, said second plasma treatment being a H_2 based plasma treatment.

15. (previously presented) The method of claim 14, said H_2 based plasma treatment comprising applying isotropic plasma etching in an etchant comprising nitrogen, performed in a parallel HDP reactor in-situ, in a plasma containing H_2 at a flow rate of

between about 30 and 60 sccm, in an argon carrier gas at a flow rate sufficient to maintain a pressure between about 5 and 15 mTorr said HDP reactor and at an rf power of between about 400 and 1,200 Watts TCP and between about 1,000 and 1,500 Watts bias.

16. (currently amended) The method of claim 1, said etch stop layer deposited over ~~the surface of~~ said substrate comprising a material selected from the group consisting of nitride and carbide and composite films such as oxide/carbide and oxide nitride.